T04D07 – 14.1-3 IB Practice

Name……..

1. In 1954 Linus Pauling was awarded the Chemistry Nobel Prize for his work on the nature of the chemical bond. Covalent bonds are one example of intramolecular bonding.
Explain the formation of the following.

(i) σ bonding

(2)

(ii) π bonding

(2)

(iii) double bonds

(1)

(iv) triple bonds

(1)
(Total 6 marks)

2. Atomic orbitals can mix by hybridization to form new orbitals for bonding.
Identify the type of hybridization present in each of the **three** following molecules.
Deduce and explain their shapes.

(i) OF_2

(3)

(ii) H_2CO

(3)

(iii) C_2H_2

(3)
(Total 9 marks)

3. (a) (i) State the meaning of the term *hybridization*.

(1)

(ii) State the type of hybridization around the carbon atoms in C_{60} fullerene, diamond and graphite.

(3)

(iii) Explain why graphite and C_{60} fullerene can conduct electricity.

(2)

(b) (i) Compare how atomic orbitals overlap in the formation of sigma (σ) and pi (π) bonds.

(2)

(ii) State the number of sigma bonds and pi bonds in $H_2CC(CH_3)CHCH_2$.

(2)

(Total 10 marks)